IN THE CLAIMS

1. (Currently Amended) A method of manufacturing a rigid foam board consisting essentially of:

incorporating nano-particle nucleating agents into a polymer melt, said nano-particle nucleating agents being selected from intercalated graphites and expanded graphites and having a particle size in at least one dimension of less than 100 [angstroms] nanometers;

incorporating a blowing agent into the polymer melt under a first pressure and at a first temperature;

extruding the polymer melt under a second pressure and at a second temperature, the second pressure and second temperature being sufficient to allow the polymer melt to expand and form a foam board having a solid foam structure; and

cooling the foam board, said foam board having an average cell size between 60 μm and 120 μm and having a cell size distribution;

wherein said polymer melt includes an alkenyl aromatic polymer material; and

wherein no nucleating agents other than said intercalated graphites and expanded graphites are incorporated into the polymer melt. [; and].